

Assessment Schedule – 2007**Science: Describe aspects of chemistry (90189)****Evidence Statement**

| Q | Evidence | Achievement | Achievement with Merit | Achievement with Excellence |
|--------------|--|---|---|---|
| 1(a) (i) | protons = 19 electrons = 19 neutrons = 20 | All correct. | | |
| (a) (ii) | protons and neutrons | Both correct. | | |
| (a) (iii) | 2,8,8,1 | Correct. | | |
| (b) | Similarities <ul style="list-style-type: none"> All three have same number of protons (3). Differences <ul style="list-style-type: none"> Number of neutrons are different between ${}^6\text{Li}$ and ${}^7\text{Li}$, ${}^6\text{Li}$ has 3, ${}^7\text{Li}$ has 4. Number of electrons are different between the ion and the atoms. Li^+ has 2 electrons whereas ${}^6\text{Li}$ and ${}^7\text{Li}$ have 3. | Either a similarity or difference described or complete description of one species. | Uses a similarity and a difference to explain atomic structure. | Uses one similarity and two differences, including numbers, to compare and contrast atomic structure. |
| (c) (i) | ZnO K_2SO_4 $\text{Ca}(\text{HCO}_3)_2$ | 2 out of 3 correct | | |
| (c) (ii) | Copper hydroxide Lead sulfide Magnesium chloride | 2 out of 3 correct | | |
| (d) (i) | Charges are: $3+$ $2+$ $3+$ | 2 out of 3 correct | | |
| (d) (ii) | Hydroxide has charge $1-$ so total negative charge is $2-$. To balance out charges and make a neutral species, charge on X must be $2+$ to cancel out the $2-$. | Description of charges. | Full explanation shows understanding of charges. | |
| (e) | Magnesium + oxygen \rightarrow magnesium oxide | correct | | |
| (f) | $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2$ | 3 formulae correct | 4 formulae correct but equation not balanced. | Equation and balancing all correct |
| 2(a) | Metal E | correct | | |
| (b) | Melting point/not very reactive. | One of: Melting point/not very reactive. | | |

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| (c) | Electron arrangement of Na is 2, 8, 1 so it is very close to having a full valence energy level so it is very reactive. | A is the most reactive. | Relates reactivity to electron arrangement. | |
| (d) | Metal F has a lower density. This makes it more suitable for overhead power lines as it is lighter and therefore the poles can hold the weight. | Density identified as the property. | Property identified and link made to use as power line. | |
| (e) | Reaction with acid. With acid, B will not react/ reacts only slowly and D will bubble forming (hydrogen) gas. | Test described | Test described and results linked to metal. | |
| (f) | Aluminium, though more reactive, does not react with air/ water as it has an oxide coating, which protects it. Iron, on the other hand, readily reacts with air/ water leading to rust. | One correct, relevant statement about aluminium eg aluminium has a protective coating. | One reason explained eg Al forms a protective Al oxide coating, therefore preventing it from reacting with air/ water. Or relevant contrast of aluminium's and iron's properties. | Statement linked to use and contrasted with iron. |
| 3(a) | Sulfuric acid chosen. Because it has the sulfate ion required. Copper chloride would be formed with hydrochloric acid. | Sulfuric acid chosen. | EITHER reason for using sulfuric acid given OR reason for not using hydrochloric acid given. | |
| (b) | Copper oxide + sulfuric acid → copper sulfate + water | correct | | |
| 4(a) | Water – red and blue NaOH – blue and blue HCl – red and red. | 2 of 3 rows correct. | | |
| (b) | Water – 7 NaOH between 9 and 14. HCl between 0 and 3. | 2 substances out of 3 correct. | | |
| (c) | Solution bubbles. When an acid reacts with a carbonate, carbon dioxide gas is produced which will be observed as bubbling. | Solution bubbles. | Reason for bubbles explained. | |
| (d) | $\text{Na}_2\text{CO}_3 + 2\text{HCl} \rightarrow 2\text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$ | 3 formulae correct. | Correct formulae but error in balancing. | Fully balanced equation |

Judgement Statement

| Achievement | Achievement with Merit | Achievement with Excellence |
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| ELEVEN questions answered correctly. Minimum of $11 \times A$ | FIFTEEN questions answered correctly, including at least FIVE at Merit level. Minimum of $5 \times M + 10 \times A$ | SIXTEEN questions answered correctly, including at least TWO at Excellence level (with ONE from 1(b) or 2(f), and ONE from 1(f) or 4(d)) and at least FOUR at Merit level. Minimum of $2 \times E + 4 \times M + 10 \times A$ |